REMARKS

Reconsideration of the above-referenced application in view of the above amendment, and of the following remarks, is respectfully requested.

Claims 1, and 3-16 are pending in this case. Claims 1 and 9 are amended herein. Claim 2 is cancelled herein.

The Examiner rejected claims 1-3, 5-6 under 35 U.S.C. § 102(e) as being anticipated by McDeVitt et al. (U.S. 5,494,860).

Applicant respectfully submits that amended claim 1 is unanticipated by McDeVitt et al as there is no disclosure or suggestion in the reference of forming a conductive liner in a hole of a dielectric layer, treating the conductive liner with hydrogen, and after treating the conductive liner with hydrogen, filling the hole with a conductive metal. McDeVitt teaches a conductive structure in which an aluminum/titanium/aluminum sandwich is formed. After the Al/Ti/Al sandwich is formed, it is annealed first in a hydrogen-free ambient and then in a hydrogen ambient. McDevitt does not disclose or suggest treating the conductive liner with hydrogen before filling the hole with a conductive metal as required by the claim. In an alternative embodiment, McDeVitt teaches forming a titanium silicide by depositing Ti over a silicon surface and performing the two-step anneal. In this embodiment, there is no dielectric layer, hole, or conductive metal (other than the Ti) taught. In addition, the Ti layer is not a conductive liner and it is not formed in the hole in which the conductive metal later fills. Instead, it is used to form the silicide. In another embodiment, Ti and TiN are deposited over a silicon or silicide surface and the two-step anneal is performed. Again, there is no dielectric layer, hole, or conductive metal (other than the Ti) taught in this embodiment. McDeVitt does not disclose or suggest forming a conductive liner in a hole, treating the conductive liner with hydrogen, and then filling the hole with a conductive metal as required by the claim. Accordingly, Applicant respectfully

submits that claim 1 and the claims dependent thereon are unanticipated by McD Vitt.

The Examiner rejected claims 4, 7-8, and 9-16 under 35 U.S.C. § 103(a) as being unpatentable over McDeVitt et al. (U.S. 5,494,860) and further in view of Sandhu et al. (U.S. 6,291,340) and Sharan et al. (U.S. 6,335,282).

Applicant respectfully submits that claims 4, 7, and 8 are patentable over the references as there is no disclosure or suggestion in the references of forming a conductive liner in a hole of a dielectric layer, treating the conductive liner with hydrogen, and after treating the conductive liner with hydrogen, filling the hole with a conductive metal, as required by claim 1, from which these claims depend. As discussed above, McDeVitt does not teach treating a conductive liner formed in a hole with hydrogen prior to filling the hole with a conductive metal. Sharan is added by the Examiner to teach a plasma treatment in hydrogen that comprises ammonia. Sandhu is added by the Examiner to teach filling a hole with tungsten. The references as combined do not disclose or suggest treating a conductive liner formed in a hole with hydrogen prior to filling the hole with a conductive metal. Accordingly, Applicant respectfully submits that claims 4, 7, and 8 are patentable over the references.

Applicant respectfully submits that amended claim 9 is patentable over the references as there is no disclosure or suggestion in the references of depositing titanium over a dielectric layer, including on exposed surfaces within a contact hole, treating the titanium with hydrogen, and then filling the contact hole with tungsten. As discussed above, McDeVitt teaches forming an Al/Ti/Al stack and then performing a two-step anneal where the second step is a hydrogen anneal. The hydrogen anneal is performed after the Al is deposited in the via (hole). The other embodiments of McDeVitt do not teach depositing the Ti in the contact hole or filling the contact hole with tungsten (or other metal) after the treating step. Sharan is added by the Examiner to teach a plasma tr atment in hydrogen that

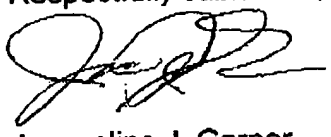
comprises ammonia. Sandhu is added by the Examiner to teach filling a hole with tungsten. There is no disclosur or suggestion in th ref rences of depositing titanium over a dielectric layer, including on exposed surfaces within a contact hole, treating the titanium with hydrogen, and then filling the contact hole with tungsten. Accordingly, Applicant respectfully submits that claim 9 and the claims dependent thereon are patentable over the references.

The other references cited by the Examiner have been reviewed but are not felt to come within the scope of the claims as amended.

Attached hereto is a marked up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version with Markings to Show Changes Made.**"

In light of the above, Applicant respectfully requests withdrawal of the Examiner's rejections and allowance of claims 1, and 3-16. If the Examiner has any questions or other correspondence regarding this application, Applicant requests that the Examiner contact Applicant's attorney at the below listed telephone number and address.

Respectfully submitted,



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Version with Markings to Show Changes Made

1. (amended) A method of forming a conductive structure in an integrated circuit, comprising the steps of:

forming a dielectric layer over a semiconductor body;

forming a hole in said dielectric layer;

forming a conductive liner in said hole;

annealing said conductive liner;

treating said conductive liner with hydrogen;

forming a conductive barrier over said conductive liner; and

after treating the conductive liner with hydrogen, filling said hole with a conductive metal.

Claim 2 is cancelled.

9. (amended) A method for forming a contact in an integrated circuit, comprising the steps of:

forming a dielectric layer over a semiconductor body;

etching a contact hole extending through said dielectric layer;

depositing titanium over said dielectric layer, including on exposed surfaces within said contact hole;

annealing said titanium;

treating said titanium with hydrogen;

depositing TiN over said titanium; and

then, filling said contact hole with tungsten.